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REVIEWS.

Fourteenth Annual Report of the New York State Geologist for 1894. JAMES HALL, State Geologist.

This volume of 669 pages, besides containing the short report of the state geologist giving an account of the work done under his direction, embraces several valuable papers upon the geology and palæontology of New York state. The brief reviews of these papers here given are taken largely from those written by the state geologist and printed in his report at the beginning of the volume.

1. *A Preliminary Description of the Faulted Region of Herkimer, Fulton, Montgomery, and Saratoga Counties.* By N. H. DARTON, pp. 31–56, Pls. I–IX, Figs. 1–12.

The field work upon which this paper is based was done in connection with the preparation of the geological map of the state. It describes in detail a region of country which was originally described by Vanuxem in his report on the geology of the Third District. It gives an account of the general relations of the faults, and describes in detail those at Little Falls, on the East Canada Creek, St. Johnsville, the Noses, Fonda, Tribes Hill, Broadalbin, Hoffman's Ferry, Saratoga, and Lake George.

The region is a general monocline with sediments of slightly varying dip, and the faults traversing this monocline, accompanied by certain features of local disturbance, have considerably modified its regularity. As a rule, these displacements do not make conspicuous features in the topography, but one of them, at Little Falls, gives rise to one of the most striking features in the scenery of the Mohawk valley.

2. *Report on the Structural and Economic Geology of Seneca County.* By D. F. LINCOLN, M.D., pp. 57–125, Pls. I–XIX, Figs. 1–30.

The subject treated in this paper is covered under three general divisions: (1) surface geology; (2) stratigraphic geology; (3) economic geology. Under the first head are given detailed accounts of the topography, and also of the superficial accumulations, their nature, and distribution. The sections on stratigraphic geology considers each formation in succession, from the Salina to the Portage, giving the local development and variations of each with fullness and precision. Faunal characters are touched upon to some extent, no wide difference in these respects from adjoining regions being noted. Under the head of economic geology are considered all the rock products of the county, their mode of exploitation, treatment, and economic value.

3. *The Principles of Palæontology.* By FELIX BERNARD. Translated by C. E. BROOKS, pp. 130–215.

This paper is extracted from Bernard's *Eléments de Paleontologie,* Paris, 1895, and is translated and here published for the benefit of American students to whom Bernard's entire works may not be accessible. No other writer has succeeded in setting forth so clearly the actual condition of the science, its relations to other departments of knowledge, and the inherent importance of the problems with which it is wholly concerned.

4. *Development and Mode of Growth of Diplograptus, McCoy.* By R. RUEDEMANN, pp. 217–258, Pls. I–V.

The observations recorded in this paper are based upon material in a remarkably perfect condition of preservation, obtained from the Utica slate at Dolgeville, N. Y. The paper shows that these graptolites, generally occurring as isolated stipes, were actually colonies composed of a large number of such individual stipes, growing radially from a center. The structure of the central part of the colony is shown to consist in (1) a central floating sack or pneumatocyst, demonstrating that the colony was unattached; (2) a verticil of spherical gonangia, within which are found masses of young graptolites or siculæ attached to a central axis; beneath the gonangia are (3) the radiately arranged graptolite stipes attached by long, bare extensions of the axial rod or virgula of each stipe. The paper is illustrated with five plates of highly instructive drawings.

5. *A Revision of the Sponges and Cœlenterates of the Lower Helderberg Group of New York.* By G. H. GIRTY, pp. 259–322, Pls. I–VII.

In this paper the known species of the groups mentioned are redescribed, with one new genus and ten new species. Four genera of sponges, with five species, are recorded, with thirteen genera and twenty-one species of cœlenterata.

6. *New Species of Brachiopoda described in the Palæontology of New York*, Vol. VIII, Parts I and II, 1872–1892. By JAMES HALL, pp. 323–402, Pls. I–XIV.

In this paper are published the descriptions of 106 species of brachiopoda, which were described incidentally and sometimes figured without descriptions in the recent work upon the class by Hall and Clarke.

7. *A Handbook of the Genera of North American Palæozoic Bryozoa.* With an Introduction upon the Structure of Living Species. By G. B. SIMPSON, pp. 403–699. Pls. A–E, I–XXV, and 222 figures in the text.

The first portion of this work is devoted to the recent bryozoa, and contains the history of observations upon these organisms from 1599 to the present time, followed by a bibliography and an illustrated detailed account of the anatomy.

The second part is devoted to the fossil forms from the Palæozoic rocks, and contains a scheme of classification, the bibliography of the Palæozoic species of America, a list of the genera and species described, with references to authorship and the geologic formations in which they occur. The genera described number 156, the species enumerated are about 1100. The main portion of the second part is devoted to diagnoses of the genera, illustrated by 222 figures in the text and by 25 plates.

STUART WELLER.

Petrology for Students, An Introduction to the Study of Rocks under the Microscope. By ALFRED HARKER, M.A., F.G.S. Second Edition, Revised. Cambridge, England, 1897.

A review of the first edition of this book by the present writer appeared in this JOURNAL, Vol. III, 1895, p. 856. The present edition reproduces the original text, with slight alterations, some of which follow the changes that appeared in the third edition of the second volume of Rosenbusch's *Mikroskopische Physiographie*, etc., published in 1896; besides the addition of numerous notices of American and Norwegian occurrences of various rocks, with references to their descriptions. The fuller mention of American occurrences increases